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<u>L21</u>	((717/105)!.CCLS. ) )	60	<u>L21</u>
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<u>L19</u>	((717/102)!.CCLS. )	28	<u>L19</u>
<u>L18</u>	((717/5)!.CCLS. )	0	<u>L18</u>
<u>L17</u>	((717/\$)!.CCLS.)	4347	<u>L17</u>
<u>L16</u>	L6 and (stag\$ near5 tables or temporary near5 tables)	6	<u>L16</u>
<u>L15</u>	((707/\$)!.CCLS.) )	14400	<u>L15</u>
<u>L14</u>	((707/206)!.CCLS.) )	327	<u>L14</u>
<u>L13</u>	((707/200)!.CCLS.) )	1164	<u>L13</u>
<u>L12</u>	((707/104.1)!.CCLS.) )	2126	<u>L12</u>
<u>L11</u>	((707/100)!.CCLS.) )	1422	<u>L11</u>
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<u>L9</u>	((707/1)!.CCLS.) )	2175	<u>L9</u>
<u>L8</u>	((707/101)!.CCLS. )	1023	<u>L8</u>
<u>L7</u>	L6 and (atag\$ near5 tables or temporary near5 tables)	3	<u>L7</u>
<u>L6</u>	L5 and metadata	27	<u>L6</u>
<u>L5</u>	L4 and business and database	80	<u>L5</u>
<u>L4</u>	populat\$ and datamart or populat\$ and data near2 mart	87	<u>L4</u>
<u>L3</u>	L2 and (stag\$ near5 tables or temporary near5 tables)	44	<u>L3</u>
<u>L2</u>	L1 and metadata	1187	<u>L2</u>
<u>L1</u>	business and database or business and data near2 base	35435	<u>L1</u>

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<u>L8</u>	(((345/781)!.CCLS.))	382	<u>L8</u>
<u>L7</u>	((345/764)!.CCLS. )	583	<u>L7</u>
<u>L6</u>	L4 and (datawarehouse or data near2 warehouse or datamart or data near2 mart)	53	<u>L6</u>
<u>L5</u>	L4 and (datawarehouse or datamart)	2	<u>L5</u>
<u>L4</u>	L3 and populat\$5	389	<u>L4</u>
<u>L3</u>	L1 and metadata! or meta-data! or (meta! adj2 data!)	2253	<u>L3</u>
<u>L2</u>	L1 and metadata! or meta-data! pr (meta! adj2 data!)	64383	<u>L2</u>
<u>L1</u>	((345/\$)!.CCLS.))	50719	<u>L1</u>

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L6: Entry 36 of 53

File: USPT

Jun 25, 2002

US-PAT-NO: 6411961

DOCUMENT-IDENTIFIER: US 6411961 B1

TITLE: Apparatus for providing a reverse star schema data model

DATE-ISSUED: June 25, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chen; Li-Wen	Cupertino	CA		

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
MetaEdge Corporation	Sunnyvale	CA			02

APPL-NO: 09/ 306650 [PALM]

DATE FILED: May 6, 1999

## PARENT-CASE:

CROSS-REFERENCES TO RELATED APPLICATIONS This application claims priority from the following U.S. Provisional Patent Application, the disclosure of which, including all appendices and all attached documents, is incorporated by reference in its entirety for all purposes: U.S. Provisional Patent Application Ser. No. 60/116,086, Li-Wen Chen entitled, "METHOD AND APPARATUS FOR PERFORMING CUSTOMER DATA ANALYSIS OF A COMPUTER DATABASE USING REVERSE STAR SCHEMA DATA MODEL," filed Jan. 15, 1999. The following commonly-owned co-pending applications, including this one, are being filed concurrently and the others are hereby incorporated by reference in their entirety for all purposes: 1. U.S. patent application Ser. No. 09/306,677, Li-Wen Chen and Juan Oritz entitled, "METHOD FOR PROVIDING A REVERSE STAR SCHEMA DATA MODEL"; 2. U.S. patent application Ser. No. 09/306,650, Li-Wen Chen entitled, "APPARATUS FOR PROVIDING A REVERSE STAR SCHEMA DATA MODEL"; and 3. U.S. patent application Ser. No. 09/306,693, Li-Wen Chen entitled, "SYSTEM FOR PROVIDING A REVERSE STAR SCHEMA DATA MODEL".

INT-CL: [07] G06 F 17/60

US-CL-ISSUED: 707/102; 707/104.1, 705/10

US-CL-CURRENT: 707/102; 705/10, 707/104.1

FIELD-OF-SEARCH: 705/10, 707/3, 707/5, 707/10, 707/103, 707/201, 707/100-104, 717/1

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

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PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> 4972504	November 1990	Daniel, Jr. et al.	
<input type="checkbox"/> 5036314	July 1991	Barillari et al.	
<input type="checkbox"/> 5168445	December 1992	Kawashima et al.	
<input type="checkbox"/> 5191522	March 1993	Bosco et al.	364/401
<input type="checkbox"/> 5299115	March 1994	Fields et al.	
<input type="checkbox"/> 5615109	March 1997	Eder	
<input type="checkbox"/> 5644723	July 1997	Deaton et al.	
<input type="checkbox"/> 5715450	February 1998	Ambrose et al.	
<input type="checkbox"/> 5721903	February 1998	Anand et al.	395/605
<input type="checkbox"/> 5758355	May 1998	Buchanan	
<input type="checkbox"/> 5787437	July 1998	Potterveld et al.	707/103
<input type="checkbox"/> 5794246	August 1998	Sankaran et al.	
<input type="checkbox"/> 5854746	December 1998	Yamamoto et al.	
<input type="checkbox"/> 5873096	February 1999	Lim et al.	
<input type="checkbox"/> 5893075	April 1999	Plainfield et al.	
<input type="checkbox"/> 6151601	November 2000	Papierniak et al.	707/10
<input type="checkbox"/> 6167405	December 2000	Rosensteel, Jr. et al.	707/102
<input type="checkbox"/> 6212524	April 2001	Weissman et al.	707/101

## FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
WO-200057311	February 2001	WO	

## OTHER PUBLICATIONS

Gopalkrishnan et al. Star/Snow-flake Schema Driven Object-Relationship Data Warehouse Design and Query Processing Strategy. star schema conversion to object-relational warehouse.\*

Brooks. Mark of the data marts. DBMS, Mar. 1997, v10, n3, pp 55(4).\*

Krippendorff et al. The translation of star schema into entity relationship diagrams. Database and Expert Systems Applications, Sep. 1997, pp. 390-395.\*

Greene. Oracle8 Server Unleashed. Sams, 1998, chapter 30 "Data Warehouses".\*

Brachman et al. Mining Business Databases. Communications of the ACM, Nov. 1996, pp. 42-48.\*

Firestone. Object-oriented Data Warehousing. Executive Information Systems, Inc. White Paper No. 5, Aug. 7, 1997, downloaded Jul. 25, 2001 <http://dkms.com>.

ART-UNIT: 2163

PRIMARY-EXAMINER: Hafiz; Tariq R.

ASSISTANT-EXAMINER: Robertson; D.

## ABSTRACT:

According to the invention, techniques for organizing information from systems in a data warehousing environment are provided. In a particular embodiment, the invention provides an apparatus for analyzing data in at least data source of an enterprise. The apparatus can include a meta model for an enterprise. The enterprise is typically a business activity, but can also be other loci of human activity. A data schema derived from the meta model can also be part of the apparatus. The apparatus can also include a database organized according to the data schema. The apparatus can translate data from a variety of sources to the data schema. The apparatus can incorporate data into the database and perform a variety of analyses on the data in the database.

10 Claims, 16 Drawing Figures

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<u>L46</u>	L45 and metadata	88	<u>L46</u>
<u>L45</u>	business near2 database	1093	<u>L45</u>
<u>L44</u>	L42 and metadata	7	<u>L44</u>
<u>L43</u>	L42 and metadata near5 schema	0	<u>L43</u>
<u>L42</u>	business near2 database near3 system	146	<u>L42</u>
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<u>L35</u>	((((707/203)!.CCLS.) )	764	<u>L35</u>

<u>L34</u>	((((707/202)!..CCLS.) )	558	<u>L34</u>
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<u>L31</u>	((((707/102)!..CCLS.) )	1508	<u>L31</u>
<u>L30</u>	((((707/101)!..CCLS.) )	1023	<u>L30</u>
<u>L29</u>	((((707/9)!..CCLS.) )	660	<u>L29</u>
<u>L28</u>	((((707/8)!..CCLS.) )	606	<u>L28</u>
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<u>L26</u>	((((707/6)!..CCLS.) )	878	<u>L26</u>
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<u>L24</u>	((((707/4)!..CCLS.) )	1199	<u>L24</u>
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<u>L19</u>	((717/102 )!..CCLS. )	28	<u>L19</u>
<u>L18</u>	((((717/5 )!..CCLS. ) )	0	<u>L18</u>
<u>L17</u>	((717/\$)!..CCLS.)	4347	<u>L17</u>
<u>L16</u>	L6 and (stag\$ near5 tables or temporary near5 tables)	6	<u>L16</u>
<u>L15</u>	((((707/\$)!..CCLS.) )	14400	<u>L15</u>
<u>L14</u>	((((707/206)!..CCLS.) )	327	<u>L14</u>
<u>L13</u>	((((707/200)!..CCLS.) )	1164	<u>L13</u>
<u>L12</u>	((((707/104.1)!..CCLS.) )	2126	<u>L12</u>
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<u>L9</u>	((((707/1 )!..CCLS.) )	2175	<u>L9</u>
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<u>L7</u>	L6 and (atag\$ near5 tables or temporary near5 tables)	3	<u>L7</u>
<u>L6</u>	L5 and metadata	27	<u>L6</u>
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<u>L3</u>	L2 and (stag\$ near5 tables or temporary near5 tables)	44	<u>L3</u>
<u>L2</u>	L1 and metadata	1187	<u>L2</u>
<u>L1</u>	business and database or business and data near2 base	35435	<u>L1</u>

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